

**REMARKS**

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 1-28 are in this case. Claims 1-25 were previously canceled. Claims 26-28 have been rejected. Claim 26 has now been amended. Claim 27 has now been canceled. New claims 29-34 have now been added.

***35 U.S.C. § 112, Second Paragraph, Rejections***

The Examiner has rejected claims 26-28 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner's rejections are respectfully traversed. Claim 26 has been amended. Claim 27 has been cancelled. New claims 29-34 have been added.

The Examiner points out that claim 26 is vague and unclear in the recitation of "a unique amino acid sequence" because it is not clearly set forth what is encompassed by unique. In addition, it is unclear what the metes and bounds of "a controllable inverting protein sequence" are and what is being controlled or how it is related to the other portions of the fusion protein.

Claim 26 has been amended to forgo the use of the phrases "a unique amino acid sequence" and "a controllable inverting protein sequence".

The limitation which pertains to the cleavable linker now appear in claim 33 which recites: "...wherein said recombinant protein and said cellulose binding peptide being separated therebetween via an amino acid sequence recognizable and digestible by a protease or cleavable under predetermined conditions". The limitation which pertains to the predetermined conditions (needed for non-enzymatic cleavage) now appears in claim 33 which recites: "...wherein said predetermined conditions are selected from the group consisting of an exposure to an increased temperature, an exposure to light and an exposure to a chemical reagent." Limitations of new claims 33 and 34 are supported by the description provided on page 33 lines 17-27 of the instant application.

Applicant believes that the above described amendments overcome the 35 U.S.C. § 112 second paragraph rejection.

*35 U.S.C. § 102 Rejections*

The Examiner has rejected claims 26-28 under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. Nos. 5,670,623 and 5,719,044. The Examiner's rejections are respectfully traversed. Claim 26 has been amended. Claim 27 has been cancelled. New claims 29-34 have been added.

The Examiner points out that U.S. Pat. Nos. 5,670,623 and 5,719,044 teach a CBD fusion protein and provide guidance for host cells including guidance for viral vectors and promoters to generate the fusion protein in a plant system.

Applicant wishes to point out that an essential feature of the present invention is the compartmentalization and thus sequestering of the fusion protein away from the host cell wall. This feature is not described or suggested by either US Pat. Nos. 5,670,623 or 5,719,044. Furthermore, these references do not describe or suggest any advantages to such sequestering and, therefore, do not provide any motivation to compartmentalize the fusion protein within a sub-cellular compartment.

As clearly pointed out on page 13 lines 13-18 of the instant application, the compartmentalization and sequestering of the fusion protein from the host cell wall is an essential feature of the present invention. While reducing the present invention to practice, the present inventors uncovered that over-expression of CBD fusion proteins in plant cells may severely inhibit growth and proliferation of such cells. To overcome this shortcoming, the present inventors have decided to direct accumulation of overexpressed CBD fusions to sub-cellular organelles so as to sequester these proteins away from the cell wall. As is shown on page 51 lines 18-21 of the instant specification, this strategy enabled overexpression of CBD fusions without negatively affecting growth and proliferation of the host plant cell.

Thus, in sharp contrast to the teaching of U.S. Pat. Nos. 5,670,623 and 5,719,044, the fusion protein of the present invention is confined to a sub-cellular compartment such as endoplasmatic reticulum, golgi apparatus, oil body, starch body, chloroplastid, chloroplast, chromoplastid, chromoplast, vacuole, lysosome, mitochondrium or nucleus (see page 40 lines 5-15). The confinement of the fusion protein to such organelles (separated from the cell wall by two sets of membranes) effectively prevents binding of the expressed CBD to the host cell wall and thereby circumvents growth inhibition, thus enabling expression of high levels of the

protein.

As is described in great lengths in the instant specification, compartmentalization of the fusion protein is preferably effected via a signal peptide capable of directing the fusion protein to the target sub-cellular compartment and a retaining peptide capable of containing the fusion protein within the target sub-cellular compartments. A description of suitable signal and retaining peptides which can be used to direct and contain the fusion protein of the present invention to specific sub-cellular compartments are provided on page 40 line 23 to page 41 line 11 of the instant application.

Hence, since an essential key feature of the present invention, namely compartmentalization of the expressed fusion protein so as to be sequestered from the host plant cell wall, is not described or suggested by either US Pat. No. 5,670,623 or US Pat. No. 5,719,044, neither of these references anticipate nor do they render obvious the present invention as now claimed.

The Examiner has also rejected claims 26-28 under 35 U.S.C. § 102(f) because the applicant did not invent the claimed subject matter. The Examiner's rejections are respectfully traversed. Claim 26 has been amended. Claim 27 has been cancelled. New claims 29-34 have been added.

The Examiner asserts that that while none of the issued claims of U.S Pat. Nos. 5,670,623 and 5,719,044 specifically set forth that the host cell is a plant system the teachings of these references provide clear guidance for the host cells contemplated and that the instantly claimed product would be an obvious choice as a host cell in use of the patented method.

As is argued above with respect to the 102(b) rejection, Applicant is of the strong opinion that the invention as now claimed is clearly distinct from, and not anticipated or rendered obvious by U.S Pat. Nos. 5,670,623 and 5,719,044.

Thus, it is also Applicant's opinion that in light of claim amendments and arguments presented above, U.S Pat. Nos. 5,670,623 and 5,719,044 cannot be used as a basis for a 102(f) rejection.

*Double Patenting*

The Examiner has rejected claims 26-28 under the doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of US Pat. No. 5,670,623 and over claims 27-34 of US Pat. No. 5,719,044. The Examiner's rejections are respectfully traversed. Claim 26 has been amended. Claim 27 has been cancelled. New claims 29-34 have been added.

The Examiner points out that although the conflicting claims are not identical, they are not patentably distinct from each other because the patent is drawn to a method of protein production and isolation of a recombinantly generated CBD fusion protein. Though none of the claims specifically set forth that the host cell used to produce the CBD fusion protein is a plant cell, the specification provides detailed guidance for viral vectors and promoters for expression of the protein in plant systems making it one of the obvious choices for the host cell.

As argued hereinabove, now amended claim 26, previously added claim 28 and new claims 29-34 of the instant application are clearly distinct from claims 1-19 of US Pat. No. 5,670,623 and claims 27-34 of U.S. Pat. No. 5,719,044 since claims 1-19 and 27-34 do not include the limitation of compartmentalizing and sequestering of the fusion protein from the host cell wall, nor can they be interpreted to include such limitations since, as argued above, the specifications of U.S. Pat. Nos. 5,670,623 and 5,719,044 do not provide support or motivation for the sequestering feature essential to the present invention.

Therefore it is respectfully submitted that claims 26 and 28-34 are now in condition for allowance. Prompt Notice of Allowance is respectfully and earnestly solicited.

Respectfully submitted,



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Date: August 5, 2004.